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OCTOBER 15, 1984

**SMARTER Dealers**

One of the most painful parts of our industry's evolution has been the learning-curve-pressure placed on dealers. It has become increasingly difficult for a dealer to stay current with the changing technology, the changing marketing and the changing legal status of home TVRO. At every show I attend, dozens of dealers stop me to 'thank CSD' for making it possible for them to be in this business. One dealer from New Mexico put it better than most in Nashville when he said:

**"Virtually everything I have really learned about equipment, installation problems and the satellite system I have learned through the pages of CSD. You have provided me with a 'correspondence course' at a very reasonable price and without CSD, I would have failed in business after the first three months."**

That's flattery, of course, and self-serving when I repeat it here. Or is it?

A full collection of **CSD** magazines has great value; it represents the sum of all of the knowledge in our field and it traces the step by step evolution of all of our hardware systems and sub-systems from day-one. A dealer armed with the knowledge contained in **CSD** is the best equipped dealer in the business today; if he has read and understood all those precious issues contain, he is ready to face the often conflicting claims of equipment suppliers and overnight 'experts' who sweep into (and out of) our industry like the daily tides.

When SPACE announced a Dealer Certification program, I was hopeful. Here, perhaps, was an 'educational system' which would benefit dealers. I was saddened, however, when I attended a meeting of the new SPACE Dealer Board (see **CSD/2**, September 15th, pages 12 to 15) and heard so many negative comments concerning the **first** two 'courses' offered by the certification program in Nashville. The negatives I heard suggested to me that there should be a 'course review board' within the SPACE Dealer

Board and that review group should approve course outlines in advance of any courses actually being taught in open session. Moreover, I believe that those who have been **hired** to put on these courses should also be required to give a 'dry run' of their courses to the same review board in advance of open-teaching sessions. Between an advance critique of the course outline and a commentary from real-world dealers, this should result in a better conducted, more finely tuned set of certification courses.

The second part of the Certification Program 'problem' is the widely diverse background of the dealers. There are two reasons to take these courses:

- 1) To **learn** enough to be a better dealer, and,
- 2) To **pass** the 'tests' at the end of the courses so that you can be awarded a 'certificate.'

Being smarter requires no additional explanation. The certificate does. In an **ideal world**, the certificate would be a proud asset of the dealer(ship); something to hang on the wall in the showroom to point to with some pride. In a rapidly evolving dealer driven industry where the consumer may be having problems separating 'qualified dealers' from those who are not qualified, the certificate should be a tangible 'asset' of the qualified dealer(ship). **In theory**, the non-qualified guys would have **no certificates** and the consumers would quickly figure out that such a dealer may also not be qualified to sell and install, and maintain, a TVRO.

**But this is not an ideal world** and it turns out that the certificate proposed by SPACE is not a 'Certificate of Merit' afterall; rather it is merely a piece of paper that says somebody sat in on seven courses, took seven tests, and received a piece of paper. Indirectly, it also says he spent upwards of \$525 for that piece of paper.

Our concern is that the dealer gets real value for his money and time spent acquiring this certificate.

**SMARTER DEALERS/ continues on page 22**

**COOP'S  
SATELLITE  
DIGEST  
/2**



**CSD/2** — Coop's Satellite Digest is published twice per month by West Indies Video, Ltd., a Turks and Caicos Corporation with corporate offices located at Grace Bay, Providenciales, Turks & Caicos Islands, B.W.I. Sales and subscription offices maintained at Fort Lauderdale, Fl. (P.O. Box 100858, Ft. Lauderdale, Fl. 33310; 305/771-0505 between 9 AM and 4 PM eastern, weekdays). **CSD/2** is issued on the 15th of each month as the mid-month companion to **CSD** which has been issued on the 1st of each month since the home TVRO industry began in October of 1979. **CSD/2** is combined with **CSD** for all domestic (U.S.) subscriptions and is also available optionally for **CSD** readers outside of the USA. Additionally, **CSD/2** is provided free of charge as a membership service to all 'Dealer Members of SPACE,' the international TVRO trade association, upon request from **SPACE** dealer members. Subscription rates are \$75 per year (US funds) within USA (24 issues annually), \$85 per year (US funds) for Canada and Mexico (24 issues annually) and \$100 per year (US funds) for TVRO dealers outside of the US/Canada/Mexico. All copies are sent via AIRmail to all worldwide destinations. West Indies Video is a 'Pioneer/Dealer' member of SPACE. **CSD/2** is copyright 1984© by West Indies Video, Ltd.; Robert B., Susan T., Kevin P. and Tasha A. Cooper.

## NEW PRODUCTS/ SERVICES/ EVENTS

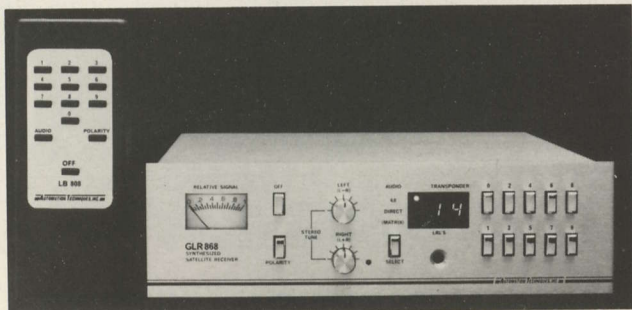
LAUX Beta 9

4' Revolution

### RECEIVER Action

**ARUNTA SATELLITE TELECOMMUNICATIONS** has announced their new Invader and Interceptor II series receivers will now be sold in New England and the Northeast by **Television Entertainment Productions** (1399 Longmeadow St., Longmeadow, Ma. 01106; 413/567-5261; and 2242 Jerome Avenue, Bronx, New York 10453; 212/733-1262). Interceptor II was first introduced at the Las Vegas show in March and features sync regeneration and graphic screen overlays displaying system status.

**AUTOMATION TECHNIQUES, INC.** (1550 N. 105th E Avenue, Tulsa, Ok. 74116; 918/836-2584) reports their GLR-868 and GLR-869 satellite receivers are now in production. The GLR-868 is a system package with 100 degree or better LNF (low noise feed) featuring automatic polarity seeking, a downconverter, receiver, modulator, infrared remote control and 125' of cable. The GLR-869 receiver includes downconverter, receiver, modulator, infrared remote control package and 125 feet of cable. It is interfaceable with Polarotor II and other similar systems. Both units feature 6.8 mono-audio plus narrow-band direct and wide-band matrix stereo.

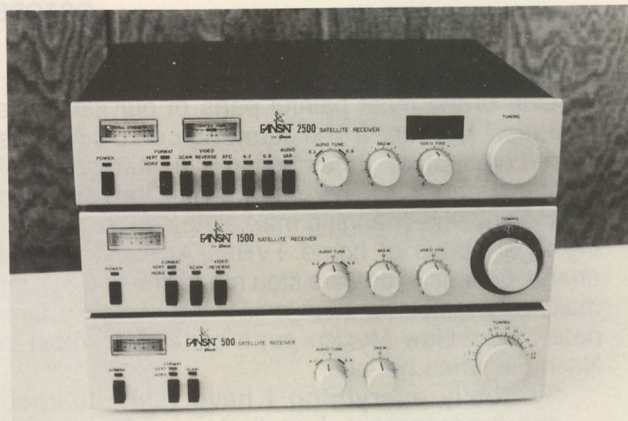


AT GLR 868 is 'greater' than ever

**ELECTROHOME CANADA** (809 Wellington St. N, Kitchener, Ontario) is now producing their E-1 TVRO receiver; a microprocessor controlled unit with a 1 GHz region block IF and a built-in programmable dish positioner system. Automatic polarity, skew, fine tuning, audio mode and bandwidth on all 24 transponders for as many as 32 satellite locations are built into the memory portion capacity.

**FANON CORPORATION** (15300 San Fernando Mission Blvd., Mission Hills, Ca. 91345; 818/365-2531) has released additional details for their trio of receivers; FANSAT 500, 1500 and 2500. The 2500 unit has 24 position detent tuning with automatic polarity selection and LED channel indication plus a scan tuning mode. Also included is a format switch (Westar to Satcom), video fine tuning, pre-set and variable tuning audio subcarriers, skew control for polarization, AFC on/off switch and signal plus center tuning meters. The 1500 is termed a 'basic receiver' with 24 channel detent tuning. The 500 is described as 'affordable.' The units are single conversion with a 'weatherized' downconverter and a 70 MHz IF. An optional remote control, the SRC-1, interfaces with the 2500 unit and uses infrared technology.

**GENERAL INSTRUMENT/RF Systems Division** (4229 S. Fre-



### FANON/ From 'luxury' to 'affordable' in three steps

mont Avenue, Tucson, Arizona 85714; 602/294-1600) plans an April 1st move-in for occupancy of a new 90,000 square foot permanent facility in Tucson. The new facility, now under construction, will house the Jerrold and RF Systems Division(s) of G.I. and more than 200 employees will call this home when completed.

**LOWRANCE ELECTRONICS, INC.** (1200 East Skelly Drive, Tulsa, Ok. 74128; 918/437-6881) has reduced front-end noise temperature with the announcement of their latest system package; the 'XP Performance Package.' The system begins with an LNA that has a noise temperature between 60 and 80 degrees and 47 dB (nominal) gain, and, a ferrite (motionless) polarizing system. Behind the 'front end' are dealer choices in many receivers including the System 70X (mono) or System 70S (stereo) units. System 70 packages have recently been approved by Reuters (TR18, F3R) for commercial installation applications.

**LUXOR NORTH AMERICAN CORPORATION** (P.O. Box 32, Bellevue, Wa. 98009; 206/451-4414) has completed submission of a total 12 GHz receive terminal package to a British advisory board which is planning the selection of 12 GHz systems for the 1987 expected launch of the Unisat system. The package included a 90 cm dish and feed, an LNC and set-top decoder/receiver with an approximate price of \$450 (US). Included in the system will be a C-MAC descrambling system as required by the British DBS operators. The 12 GHz expansion is an outgrowth of the Luxor 4 GHz technology, available in North America since the fall of 1982.

**WINEGARD COMPANY** (3000 Kirkwood Street, Burlington, Iowa 52601; 319/753-0121) has added three new 4 GHz TVRO receivers to its line-up of products now available to dealers. Model SC-7037S has infrared remote control, built-in antenna positioner; model SC-7037 is mid-priced and includes infrared remote control while model SC-7037E is a 'basic' unit minus the built-in actuator or remote control. All units have scan function, polarity format switching, LED bar graph, skew control, audio tuning, video invert switching and a crystal controlled (channel 3 or 4) modulator. An internal control adjusts for cable 'losses' between the downconverter and the receiver. List pricing varies from \$776.55 for the 'E' unit to \$1,235.80 for the 'S' unit.



WINEGARD 'S' model has infrared control to 20 feet



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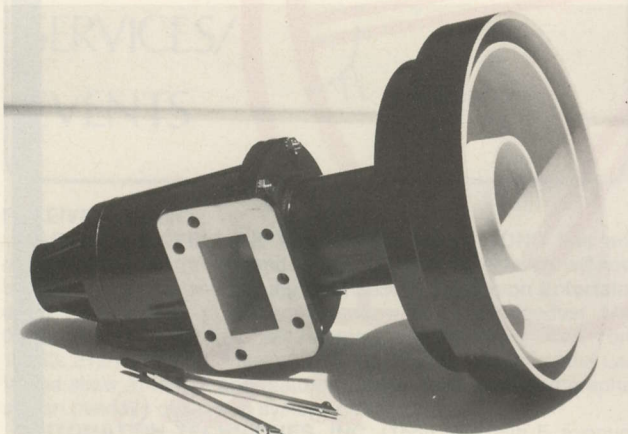
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(National) **A.D.L. ENTERPRISES** (3136 Reservoir Drive, Simi Valley, Ca. 93065; 805/526-5249) has released a new version of their 'hybrid mode feed' with a measured pattern (available) covering the full frequency spectrum from 3.65 to 4.25 GHz and a range of f/D ratios of .3 to .4. The unit is available in two configurations, with either servo or DC motor drive for probe.

**ADL goes for precision**

**CONTINENTAL SATELLITE SYSTEMS** (11485 S.E. Highway 212, Clackamas, Or. 97015; 503/656-2774) reports their dealer, Saeve Royale, Ltd. of Reseda, California recently completed a CSS 12' antenna system installation for movie star Julie Andrews and hubby-producer Blake Edwards. Continental President Dan Berge has also recently taken steps to 'authenticate' CSS antennas which he claims are being 'copied' by others and 'sold as genuine Continental antennas.' To curb the 'piracy,' Continental has begun a system of stamping the firm's name on all parts in the system to serve as an identification to dealers that the antennas they are purchasing are 'genuine Continental products.'

**ON THE MALIBU BEACH WITHOut Julie Andrews**

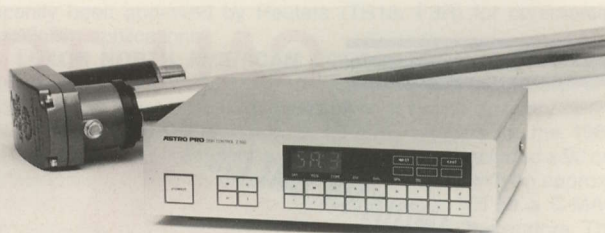
**FULTON MANUFACTURING CORPORATION** (Milwaukee, Wi. 414/321-4810) has announced a pair of button hook feed supports for TVRO application. Models BH40 and BH60 have focal adjustments in the vertical, side to side and tilting planes and attach to the base of the dish using 8 pre-punched holes. Units are plated and painted and are shipped bulk-packed including U bolts.

**KAUL-TRONICS, INC.** (P.O. Box 637, Richland Center, Wi. 53581; 608/647-8902) has entered a new mesh antenna (Nova M120 Mesh) into the marketplace. The antenna is 10 feet in diameter, has an f/D ratio of .28 and weighs 165 pounds. The dish uses (precision) die-formed extruded ribs and they claim the UPS shippable product

can be assembled in one hour's time. Black and aluminum are color choices; a five year warranty is standard and the manufacturer claims wind survival to 120 MPH.

**MULTI-FEED SYSTEM DISTRIBUTION** (P.O. Box 446, Yucaipa, Ca. 92399; 714/795-8939) has an answer for those (SMATV) systems which are faced with the 'split feed' programmer plans for Galaxy 1 and F3R (and perhaps soon, D4); a 'multi-feed' system that allows conversion of a standard parabolic antenna into a two or three bird antenna system. The system claims to be able to handle up to five separate feeds for antennas in the 4.5 to 6 meter size range, covering a wide variety of models manufactured in the past and currently by Microdyne/AFC, Scientific-Atlanta, Anixter-Purzan, M/A-COM Prodelin, Andrew, Comtech, Odom and Hughes. Their system retrofits in place of the existing single-point feed and allows the operator to extract satellite energy from birds up to 8 degrees off of antenna boresight. There is a trade-off involved; birds off boresight are somewhat reduced in signal power but not as much as you might expect; typical performance is 1 dB loss for birds 4 degrees off boresight and 2 dB for birds 8 degrees off boresight. The retrofit package is priced in the \$1,100 to \$1,925 region depending upon the number of feeds to be mounted within the package. Similar systems are available for two or three bird antennas in the 12 to 13 foot region.

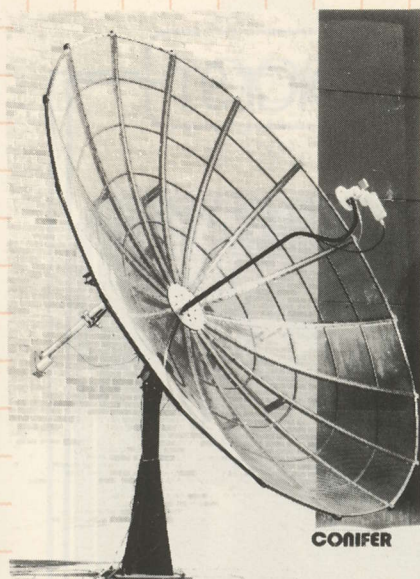
**PRO BRAND INTERNATIONAL, INC.** (1629 Newberry Avenue, Columbia, SC 29210; 803/732-0027) has formally announced their model Z-500 antenna positioner and actuator. The unit has 81 programmable satellite locations, a 3 digit display, parental lock-out to eliminate 'forbidden viewing,' a physical key lock-in to restrict viewing to a single satellite, a 6 LED display to convey to the user the motion and action of the actuator, an 18 inch and 36 volt Hall Effect sensor operated acme screw, a 1,000 pound rated load capacity, weather-proofing and a one year warranty. The unit is in stock and ready for delivery.

**ASTRO PRO / Room to grow with 81 memory locations**

**SKY SENTRY ANTENNAS** (Division of Jim Patterson, Enterprises, 111 E. Pacific, Salina, Kansas 67401; 913/827-4682) has added Sky 6 Satellite Antenna to their existing line-up of Sky 8 and Sky 10 antennas. This is a one-piece hand laid fiberglass dish (as are the 8 and 10 foot versions) with a polar mount and optional dome cover which covers the antenna surface to prevent weathering of the antenna electronics. Systems are delivered on a factory truck to dealers.

**BURR INDUSTRIES** (5 Broadway, Suite 206, Troy, N.Y. 12180; 518/272-0152) recently donated a SKYTRAC 12 radar mesh satellite antenna to the Electrical, Computer and Systems Engineering department at Rensselaer Polytechnic Institute in Troy. The 340 pound antenna is being used for academic and research purposes. Burr Industries is celebrating its first birthday this month and will announce 10 and 16 foot mesh antennas shortly.

**STARFINDER, INC.** (2960 So. West Temple, Salt Lake City, Utah 84115; 801/467-2793) is shipping their 'Starfinder II' programmable (computer) satellite dish control system. The unit uses an 8085 microprocessor with parental lock out, 10 year lithium battery for memory retention, a maximum of 80 satellite positions, a 4 digit LED display and a real-time clock. The unit responds to manual as well as timed instructions and reads out errors on the display to help users better



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## FOCUS ON WASHINGTON/ WE ARE LEGAL!!!

### COINCIDENCE Of Events

On Thursday the 11th of October the United States Senate placed their stamp of approval on the home TVRO industry and with their action the last roadblock in getting the 'blessing of Congress and the President' disappeared: **TVRO was legal for now and for all time into the future!**

Operating on the fastest track possible, the home TVRO industry led by the staff of Brown and Finn did the impossible; it managed to get important new legislation introduced into both Houses of Congress during an election year and then get that legislation adopted in that election year without benefit of the almost mandatory and time consuming 'committee hearings' which virtually every other important legislation has always followed. A detailed analysis of how this amazing bit of political maneuvering occurred is far less important today than that it did happen. Here is what WE got and where we stand, first:

- 1) Under the new legislation, home TVRO is completely legal. You no longer must 'grin and bear it' when a potential customer asks you to explain away stories that TVRO users are 'pirates' and breaking some obscure law.
- 2) The new legislation, adopted first by the House and then by the Senate, clearly spells out that 'Section 605' of the Communications Act of 1934 is modified so that it is NOT illegal to manufacture, distribute, sell or use a home TVRO system on private premises.

**This is essentially the 'Goldwater Bill'** first introduced into Congress this past March and guaranteeing 'right of access' to satellite TV for private (non-commercial) use. This is **not** the Gore/Tauzin/Rose bill, introduced at essentially the same time which would have also guaranteed individual home terminals the right to gain access to 'scrambled premium programming' at a 'fair market price.'

Under the terms of the compromise legislation, we are (in effect) 'trading immediate elimination of the Section 605 Threat' for a number of 'to-be-negotiated' unknowns down the road some distance. The legislation rode through the House attached to the very controversial cable television bill and was passed as 'Section 5' in HR 4103. Here is what we got, and what we lost:

- 1) We won:
  - A) Language which recognizes the legality of manufacturing, distributing, installing **and using** private (home) TVRO terminals for reception of any **non-scrambled** signals;
  - B) A prohibition on states or municipalities enacting local legislation which might be deemed 'contrary' to the new Federal stature.
- 2) Somebody lost:
  - A) Commercial use of satellite signals (example: a bar receiving ESPN for public display) was **not authorized** and in fact there are stiff fines for such an act;
  - B) The mandatory or forced use of scrambled services, as proposed in the House bill introduced by Congressmen Gore/Tauzin/Rose dropped through the cracks, to be revisited another day.

**Let's look at the details.**



**SENATOR BARRY GOLDWATER/** appearing at the **SPACE** Orlando convention in early November of 1983 was clearly overwhelmed by his reception in our industry. Goldwater's support for TVRO proved extremely important in the recent adoption of legislation for TVRO.

The most important aspect of 'the victory' is that the industry won the legal right to exist; that Section 605 of the 1934 Communications Act is now modified so that for all time the industry has the right to exist. The threat of FCC action or lawsuits for alleged violations of Section 605 is now gone. **Most observers feel that alone is worth a 200% increase in consumer sales in the marketplace.**

The most damaging aspect of the legislation is that commercial installations are now clearly outside of the law (prior to the legislation there may have been some question about this) and there are some stiff fines and penalties for violators.

**The legislation is a compromise.** It was the best the industry could get on such short notice and so soon after the initial legislation was introduced into Congress. The legislation wound its way through the House, under the tutorship of Congressmen **Wirth** (Colorado), **Gore** (Tennessee), **Tauzin** (Louisiana) and **Rose** (North Carolina) because of some very skillful political maneuvering. It was in the House where the compromises came. The legislation started life as an omni-bus cable television reform act, designed to give cable new headroom to 'grow' in their dealings with cities. It got enlarged because of other 'problem areas' such as MDS/STV signal piracy. The new legislation clearly makes it illegal, for example, for anyone to manufacture, distribute, sell, install or use so-called 'black-box' decoders/descramblers for the purpose of receiving scrambled television transmissions. **There are monetary fines attached to violation of this new law;** up to \$25,000 for commercial use without authorization or on an individual (in-home) basis, fines between \$100 and \$1,000 may be levied.

The people who will feel the worst 'ill-effects' of the new legislation are those engaged in the black box business; willful, repeated violations can bring penalties to \$50,000 and jail terms. Individual, home, TVRO owners are less threatened by the terms of the legislation, even if they somehow become involved in the use of an illegal 'black box' decoder/descrambler for a service such as the Fantasy Channel. There, individual fines up to \$1,000 are possible.

What the legislation did **not** do, in addition to authorizing commercial establishments to tune-in satellite TV reception for commercial use, was address the following two areas of interest:

- 1) Network feeds are **not covered** by the legislation. The modification of Section 605, authorizing home viewers to tune-in any **UNscrambled** satellite broadcasts they wish, does NOT extend to network feeds.
- 2) The law makes provision for programmers such as HBO to scramble if they wish, but it does NOT provide that such scrambled transmissions must be made available to home TVRO

**LEGAL/ continues on page 17**

## ODOM + DEHNERT/ BARE KNUCKLE FIBERGLASS —Part 1—

Fiberglass antennas have been and continue to be a major 'force' in the TVRO marketplace. Estimates of the number of all antennas sold (for home TVRO) versus the percentage of that number which can be attributed to fiberglass antenna designs hover in the 30-40% region. Significant volume producers, such as Prodelin, Odom, and Channel Master use some form of 'solid-dish' laminated or injection molded technology.

The concept for this particular 'dialogue' originated in May of this year; a visit by Coop within a ten day span first to Randall Odom's plant in Arkansas (see CSD for July, 1984) and to Doug Dehnert's USS facility in Minnesota revealed significant parallel 'courses' for the two firms. With equally significant differences.

**Odom is a volume producer**, with the first 'automated production line' for laminated fiberglass microwave antennas in the world. A brand new plant completed in mid-year gives Odom the capacity to produce more than 3,000 8, 10, 12 (and larger) foot dishes per month. **USS is not a volume producer**; they are currently running to as many as 150 antennas per month. Odom has made a commitment to moving large quantities of merchandise and he has integrated his operation so that every phase of the plant, from initial design to finished antennas and mounts is done 'in house'; in a set of five major buildings spread throughout the Bisbee (Arkansas) region. Dehnert also does all of the work 'in house' but because of the lower production schedules, he is able to concentrate his operations in a pair of buildings.

**Randall Odom** began in the TVRO business in the fall of 1979, shortly after the first industry trade show (SPTS '79; Oklahoma City, August of 1979). He readily admits that he began by using a spun metal dish as a 'mold' for his first 10 foot antenna. At the time, Randall Odom was essentially an 'employee' of H and R Communications and he was responsible for building the antennas for H & R.

**Doug Dehnert** began playing with TVRO in 1978, enticed into the activity by a local cable system that had installed an early S/A ten meter dish and an acquaintance with the cable system manager. He had a background in fiberglass design and during the winter of 1979/1980, he carefully created his first fiberglass antenna pattern and mold; a 12.5 footer, two piece design.

Both men are 'self-made,' filled with what Randall calls 'good common sense.' Although both have been in this industry for virtually as long as there has been an industry, the two had never really become acquainted nor had they exchanged more than pleasantries in those five years of common activity. The CSD/2 tape recorder between them, the two plus Coop hid away during the Nashville show in an Odom motor home on the antenna lot and the conversation began.

**ODOM:** "I remember when it all started, very clearly. It was the 15th of September in 1979. I was sitting in Robert Coleman's driveway in Travelers Rest (SC) in a beat-up, old pick-up truck wondering why I was there. The date is fixed in my mind because my little boy's first birthday was September 23rd, and I missed it."

**CSD: What were you doing at Coleman's?**

**ODOM:** "Well, I had gotten this telephone call earlier in September

and this person asked me if I could build a parabolic dish out of fiberglass. I asked them 'What in the hell is a parabolic dish?'. Well, I was shown a set of photographs taken at the first show and while I was there they were talking with Robert Coleman on the telephone. I took the phone and I talked with Robert. I remember saying to him 'Is this deal real; it sounds like a fairy tale to me!'. The entire concept of getting television out of the sky was more than I could grasp. Robert assured me it was real enough and at that point he obviously knew more about all of this than anyone I had been able to talk with. I then knew I wanted to build a dish but I didn't know how to start or where to get the information about the parabolic curve. So I got in my truck and drove to Travelers Rest to meet with Robert. He, of course, had a couple of dishes and I made a mold off of his dish and took the mold back to Arkansas to see if we could make some more dishes."

**CSD: Did it work?**

**ODOM:** "It not only worked, it worked better than the antenna John Hastings and Virgil Richardson had brought back from Oklahoma City. It wasn't a fairy tale!"

**CSD: So you went into 'production'?**

**ODOM:** "No, not so fast. I couldn't stand the idea that we were 'copying' somebody else's antenna and I got back with Robert and he furnished me with a computer print-out for a parabola. And this was a one-piece ten-foot antenna. I realized right then that as long as I had somebody smart enough to do the math part, I could handle the actual production myself."

**CSD: Doug, how did you get started?**

**DEHNERT:** "I got started up in the north country a little bit different. I didn't know all of this stuff was going on; the first show, for example, was something we heard about months after it took place. I had an electrical contracting business that I did on weekends. The local cable company hired me to trench-in (bury) a bunch of cable for them. We lived out in the country and I asked the cable system manager why we couldn't have the same TV they had in town. He said to me 'You don't want cable anyway; the coming thing is going to be satellite television.' Naturally, I, like Randall, was more than a little suspicious about it being a fairy tale. He invited me to visit his headend where I saw my first satellite dish; a giant 10 meter S/A system. Thief River Falls (Minnesota) is not noted for very much except that it is often the 'coldest place in the nation' in the weather record department. But the little cable system in town was the third CATV system in the nation to have a TVRO antenna; they put it in early in the fall of 1975. So by 1978 or so, when I was introduced to it, they were old timers at TVRO. That led me to a force-fed home-study course for hours every night. I didn't know about Robert Coleman or Tay Howard so I had to work out the parabolic curve information and the molds on my own. Finding information, any information, was very tough. I actually got the formula for the parabolic curve out of the ARRL (Amateur Radio) Handbook!"

**CSD: What were the side effects of this?**

**DEHNERT:** "The reference manuals, such as the **Jasik Antenna Engineering Handbook**, made it painfully clear that you had to have great surface accuracy to realize the theoretical gain of the parabola. I finally found an engineer at S/A who would talk to me on the telephone; just finding somebody who understood a parabolic antenna was tough for a guy in the woods of northern Minnesota! For better or worse, he, like the Jasik book, stressed surface accuracy and structural integrity. **So I came into this firmly convinced that military type, high accuracy, specs were not a luxury but a necessity.** I have never regretted that foundation because I think it made me far more critical of what we build and ship, and, how I form an opinion when I inspect the work done by others."

**CSD: What about the size; how did you settle on a 12.5 footer for your first antenna?**

**DEHNERT:** "By now we are in 1979 and although I hadn't discovered CSD yet, I was starting to run into people who seemed to have some knowledge in this area who were convinced a 12 foot antenna **should** work. What really intrigued me was that if you priced a 15 or 20 foot antenna, it was clear that they were in the \$10,000 price region. I was beginning to form a plan in my mind; I wanted to build and sell systems. The electronics could be bought but if I was going to make any money selling systems, I was going to have to build the antenna(s). I had a background in fiberglass from Arctic Enterprises. We

had used resin transfer molding for the snowmobile fenders and parts and I understood the technology very well. As we entered the end of 1979 I felt I could sell a private system for say \$15,000, installed, provided I could build the antenna myself. But to make this work I was going to have to be able to get good pictures with a dish in the 12 to 13 foot region."

**CSD: What finally pushed you into the business?**

**DEHNERT:** "I found my first copy of **CSD** late in 1979; in the issue was a report that the FCC had 'deregulated' TVROs; licenses were no longer required. **That did it!** I was originally from the mountains of Idaho and I knew of enough communities hidden back in the mountains there and enough well-to-do people living there that I was sure I could make a living this way. My original aspirations were quite modest; I think the first projection I did suggested that **I would have to sell 5 systems the first year to make a living!**"

**CSD: Five a year?**

**DEHNERT:** "Absolutely. I probably would have been better off if I had stuck to that plan! I built a tool for the form and I was planning to build a small shop. I started out in a friend's barn after we scraped the walls clean and shoveled out the mess on the floor. I quickly found out that you can't have cows in the barn while you are laying up fiberglass! I worked on that first tool and antenna virtually the entire winter. Hell, I went home late at night with itchy shorts and fiberglass coming out of pores for months."

**CSD: This was a two piece 12 and a half foot?**

**DEHNERT:** "I didn't have room in his barn to make a full 12 foot and still be able to move it around to work on it. So I made a big decision and elected to build it in two equal half-sections."

**ODOM:** "Good God, I thought I was the only guy in the world who had that kind of start-up life in this business; this all sounds so familiar! It's funny now when you look back at it; when we made our first antenna, we were trying to figure out some way to brace it up. But that wasn't our biggest problem; **money was**. I sold my first antenna to **Lindsey Riddle** down in New Orleans. I couldn't tell him at the time, but the reason I was willing and anxious to deliver it was because **I needed his money** so I could build a second antenna!"

**DEHNERT:** "That's no joke. When we finally got where we could build antennas, I'd load the antenna half sections on a trailer and coupled with some Gardiner receivers, off I'd go. Our first sale was to a motel in Pinedale, Wyoming. This was a fairly easy sale because I knew the guy who owned the motel and he was pretty much pre-sold. So off we went with a trailer filled with the mount and the two half sections. About three weeks later I got this telephone call from a man who said 'I am John Parker and I saw your antenna at the motel in Pinedale. I have a ranch out here near Dubois and I am having trouble keeping people on the ranch. If we could get some decent television, this might solve the problem. Will it work?' I assured him it would. He said he was also talking with Scientific-Atlanta and he'd get back to me. I did some checking and found out Mr. Parker owned a huge corporation that makes virtually all of the hydraulic equipment for virtually all of the military and heavy commercial aircraft in the world. I was impressed since after the first installation we had lots of interest but the price was stopping most people. Systems were **not cheap** in those days!"

**CSD: So he called back and ordered a system?**

**DEHNERT:** "Not quite. But now that I knew that he and two sisters owned all of the stock in a 2.5 billion dollar corporation, I decided it was time for us to make our 'second sale.' I loaded three full antennas and mounts on a trailer, piled the equipment in a suburban and we headed for Dubois, Wyoming even though he had **not called me back**. We ended up knocking on his door at his 38,000 acre 'hobby ranch' and when he came to the door I said '**OK, I'm here. I am going to put one up and if you like it, we have two more.**' He liked it so well we ended up putting four complete systems on his ranch! And that made us enough money that we could come back to Minnesota to build some more tooling and really get going."

**CSD: And you became an executive!**

**DEHNERT:** "Hell no! I dug in the ground, with one of my wife's brothers as a helper, to put in more than 400 antennas myself in the beginning."

**ODOM:** "The first antenna I built I was bent over that thing myself



**ODOM:** "I'd measure it every quarter of an inch all the way down to get it as perfect as I could; hell, I thought it was perfect then!"

sanding that surface for a week . . ."

**DEHNERT:** "A week? **The whole damn winter!!!**"

**ODOM:** "Well, this was that copy we had . . ."

**DEHNERT:** "We didn't have anything to copy to start with! We built a deck on the ground and then we built ribs and started out from there. We literally went outside the shop and used a transit to 'shoot' each rib and each point on it trying to get it perfect. Then we are out there doing a half of a mold with a flange on it, using a template . . ."

**ODOM:** "Hoping like hell it was a half when you got through . . ."

**DEHNERT:** "Well, that part came out pretty good. We worked on this thing for months literally hand carving it out of solid fiberglass. But you are working with a half a template and there really is no way, with a half a template unless you've got it on a fixed point where you are pivoting it, to be sure you are in the same place each time."

**ODOM:** "That's the way I started out, using a fixed pivot point . . ."

**DEHNERT:** "Well as smart as I am, I didn't even think about that with the first antenna. And we ended up with one area on the surface where it just wasn't checking out right. I knew we had a problem and I had to think it out over several days . . ."

**ODOM:** "I laid in the bed so many nights trying to figure a way to make everything exactly like it was supposed to be and I finally figured out that if I pivoted it right in the center and spun it around the problem would be solved. I sawed the first template out with a jigsaw. I'd measure it every quarter of an inch all the way down to get it as perfect as I could. **Hell, I thought it was perfect then . . .** a quarter of an inch; that had to be perfect! I found out how the mule felt when he was pulling the sorghum mill; after about an hour of going around and around, you were so dizzy you couldn't see straight. I learned something else here; my pole, in the center, was just not quite big enough. It gave just a little bit and when you got out five feet or so from the center that slight give in the center pole made quite a difference in the accuracy of the measurement. Hell, I had to come back and do it all over again with a new, stouter, pole."

**DEHNERT:** "We did the same thing. On our first set of 12 foot tooling we made about 25 antennas. Then I stood back and tried to apply what I had learned with those antennas. There is always going to be **SOME** error, no matter how perfect you think it is. So I sat back and re-thought the problem. Those small surface errors, they had to be eliminated. We used a four inch diameter pole and set it in concrete. We put bearing hangers on it and built a big gate and a template to correct the master tool. Then I built a grinder so we could grind on the mold and we built the mold up and then reground it back down. I ended up going from a 3.75 meter antenna to a 3.8 meter antenna getting a different radius out there after we ground it down. We went through urethane filled urethane to try to make the antennas stiff . . ."

**ODOM:** "Do you remember those ribs we had on the back of our antenna at the Miami show (February 1980)? They were urethane foam covered with glass. We had a 16 footer in Miami built that way



**DEHNERT/ 'I came into this field firmly convinced that military type, high accuracy specs were not a luxury but a necessity.'**

and it took 32 people to turn the damn thing over! I'll tell you, it didn't take me too long to figure out that urethane foam wasn't the way to go because you have too much transfer; on the front side you could see those ribs showing through!"

**DEHNERT:** "On top of that, radial ribs on fiberglass won't hold it anyway. The key thing, in my mind, on an antenna is that you have to **stay away from rectangles or crosses**; anything that has four sides to it doesn't work."

**ODOM:** "Boy, that's the damn truth. Remember that square thing . . . ?"

**DEHNERT:** "You can make it rigid as hell if you can get back to triangles. That's what led to our hat section. We'd tried every combination of ribs behind the antenna you could possibly think of. My original antenna which I had leaning against the tree in my yard, ala Robert Coleman, had radial ribs and it was urethane foam. I bet we cut up 40 blocks of that junk sticking it on the back of the dish in various ways trying to figure out a way to make the dish sturdy. No matter what we did, it turned out flimsy and floppy!"

**ODOM:** "And the price you pay! Remember what happens to your face and eyes when you are cutting and sanding urethane? It clings to you with static electricity and it will eat you plumb up."

**DEHNERT:** "That and the fiberglass in your shorts! **My wife would get so damn mad** because I would come home from the shop and drop my underwear in with the rest of the stuff in the dirty clothes basket and the next thing we knew she had fiberglass in **her** underwear . . ."

**ODOM:** "Nobody can begin to appreciate it unless you have had it happen to you. Nelda would sit there literally for hours every week picking fiberglass out of my clothes. There wasn't but two people at that point; myself and Nelda's brother. That's how Odom Antennas started. **We busted our ass every day**, at least sixteen to eighteen hours a day and I guess it was the hardest time of my life."

**DEHNERT:** "We came close to dying up there after we got going. We were making a twelve and a half foot antenna and we finally got around to the design we are still building now, in that size. That's when we were contacted by an outfit out of Florida, **Concert Satellite Network**. They came to Minnesota and 'selected us' as their supplier. We were a little nervous about money; **we had to have money** or we couldn't build all of these terminals they were ordering. That got a leasing company involved in the deal. We started putting in installations in these clubs, 18 had to be done between a Christmas and New Years, trying to get them 'on the air' for the fourth of January. In that short span of time Concert Satellite Network managed to go upside down owing us \$178,000! I'll tell you . . . that just about did us in."

**CSD: Give us a similar story, Randall.**

**ODOM:** "We got started at the Miami show in February of 1980. You know, it's kind of funny; when you are raised in a cotton patch in Arkansas, sometimes you don't realize your capabilities. John Hastings had been telling me how much better they could do everything

than I could, at Starview Systems. He said they could do marketing and so on far better than me. We came home from Miami and I got behind them 100% and things started looking pretty good; **better than this country boy had ever seen!** And it went along for two years that way and then one day they sold out and left me holding the bag. I was flat broke and two years into an industry that barely knew me by my name."

**DEHNERT:** "We weren't just flat broke, we were totally upside down. We owed for all of the damn electronics that we delivered to Concert Satellite Network customers. We went to Amplica and bought all of the LNAs, went to Gardiner and bought the receivers . . ."

**CSD: That was before \$100 LNAs and \$300 receivers too . . .**

**DEHNERT:** "Long before! This stuff was spread over seven states and the clubs that agreed to put in the terminals had all made a \$3,000 down payment and they sure weren't going to let you walk in and take it back! The dish was 'nailed' to 'their roof' and I had to pay the vendors I got the equipment from. To make it really bad, this was the winter season where everything grinds to a stop because it's 40 below zero outside in Minnesota . . ."

**ODOM:** "That's kind of like being in the hospital in a bed dying and somebody comes in and shoots you . . ."

**DEHNERT:** "Yeh, and to 'retaliate' you roll over as you fall out of bed and pull the plug on your respirator! We were sitting there looking at \$223,000 in accounts payable, no money in the bank, no money coming in, I had a \$200,000 SBA loan at the bank to boot that I had to pay."

**CSD: You both made it, and perhaps would even admit, now that it is in the past, that you are better for the experience. Let's talk about the techniques that you each use to produce fiberglass antennas.**

**DEHNERT:** "There are at least two ways to make a fiberglass piece. We pull our tools out of the master by building our mold in reverse. Otherwise you have to go through two flops to get where you want to go. After you get the glass 'up,' we let it sit and cure for three weeks or so. We program our tooling now and use a body-type filler and using a grinder with a carbide tool I can finish it down to two or three thousandths. Now I have a tool that I can make my production tool off of that is within 10 thousandths max, that is cured out enough before we ever start using it that it is not going to move again. It sits over in the corner ready when I need more production tools."

**ODOM:** "What do you use to cut your template?"

**DEHNERT:** "We laminate plywood and I have a layout board that is large enough that I can lay out a full sized template right on the board. We lay it out on paper from a computer run, lay it on the laminate and then cut it with a jig-saw just **outside** the line. We use a grinder to finish it off down the line."

**ODOM:** "The next time you have one to lay out, let me send you something that will make life alot easier. We program a machine every one-sixteenth of an inch; just give me the focal distance you want and the size of the dish and when you do it this way you can hold a one thousandths tolerance all the way down the template. It is as perfect as you can get."

**DEHNERT:** "We did the same thing by going to an outfit in Minneapolis that had a microprocessor driven mill. There is no substitute for accuracy in the antenna business; I learned that very early!"

**CSD: Talk to us about the way you see people who are getting into the glass antenna business make mistakes; antennas that have inadequate strength, pieces that don't fit together to form a proper parabolic surface, dishes that flop around in the breeze. Identify the mistakes for us; what are their mistakes since you two are the 'masters' in this game.**

**DEHNERT:** "They are making the same mistakes we made in the beginning . . ."

**ODOM:** "I think probably the first mistake they make is that when they go to copy something, they don't select the best quality 'original' to copy to start with!"

**DEHNERT:** "Garbage in is garbage out; only every time you do a fiberglass copy, you are two generations away from the original garbage before you have a product. That's garbage squared!"

**ODOM:** "I think Doug will probably agree with me that the **biggest mistake** people make in the fiberglass industry is **trying to produce a**



DEHNERT/ 'They are making the same mistakes we made in the beginning ...'

product too quick and heat is the biggest enemy there is to fiberglass. And what they end up doing is destroying their tooling, their molds and the whole works because they try to go too fast with everything."

DEHNERT: "They are trying to pull the molds two or three times a day ..."

ODOM: "They are trying to turn everything too fast. It's not like building something out of metal where you can just stamp everything again and again and again. With metal, the faster you stick in the blanks the faster your production becomes. You can do that with fiberglass but the first thing you know you have destroyed your mold because of the heat."

CSD: Does it happen kind of slow, however, so a fellow is not aware that his mold is deteriorating on him? There's not a bunch of good pieces and suddenly every one goes bad on you?"

ODOM: "That's right; it happens slowly although it may not be as slow as you might think."

DEHNERT: "Generally, what I see walking around a show antenna lot such as here in Nashville is that they have rushed their molds, they do a splash from somebody else's antenna, they make a crooked mold to start with and then they make more crooked pieces out of a crooked mold. You get your shrink and then when you make a mirror image of the mold for your flip-flop to make a production tool, every stage makes a bad original piece even worse. They start right out with bad pieces and then they try to pull them too soon, before they are cured and ready to be pulled safely."

ODOM: "And add to that the shrinkage; that will kill you with fiberglass."

DEHNERT: "Yes, and then when the dish is a multi-piece you have another consideration. Just getting them to mate together

smoothly is not ALL there is to it. For example, on our 12-1/2 footer, if you take the individual half sections and measure them, you will find that each half alone is **not a perfect parabolic curve**. There is an arch in each half section, **on purpose**. When you join the sections together you have new stresses in the full structure and you need to allow for that in the original pieces. That's why, for example, on assembling our 12-1/2 foot you have to start with the bolts in the center and work out. **There is an on-purpose stress in there** that has to be 'pulled out' during assembly. When you get done, **THEN you will have a parabola shape**. That's why I never allowed us to build a four piece antenna, for example; I could never build one that satisfied me that after all four pieces were joined together that the new stresses created by the full antenna could balance or neutralize each other so you still had a parabola when you got it all assembled."

ODOM: "To tell you the truth about it, I can't make a four-piece antenna that satisfies me either. I can't make a one-piece antenna that satisfies me!"

CSD: But you have mentioned that because the dealers have an attitude about how they want to transport and assemble antennas that Odom Antennas was forced into making a four piece.

ODOM: "No question, there was a market there and by not building a four-piece ten foot, for example, I was missing a big chunk of that market. So now we do build one and it is a top seller. I changed my attitude a little bit here; if I had a completely free hand, all antennas would be one-piece. But the market tells you what they want and they told me they wanted a four-piece ten foot. So I took a close look at every other four piece antenna and figured out how I could do it better; significantly better. It may not be the way I would build antennas in an ideal world, but in the real world, I am reasonably satisfied that nobody builds one with four pieces that is as good and certainly not any better. **But I still think that using four piece antennas is a compromise, a mistake, by the dealers.**"

DEHNERT: "Randall's right. Sooner or later, if you stay in this business, you come to the conclusion that multiple pieces are a mistake and people who insist on using them when they could be installing the same size dish in a single piece are trading performance and long term reliability for ease of transport and ease of installation. I don't like it; Randall doesn't like it ..."

ODOM: "Doug's right, but neither of us have figured out how to ship a sixteen foot antenna down a freeway with 13'6" underpasses either!"

DEHNERT: "You'd have a 13'6" antenna when you got through ..."

ODOM: "Well, 13'6" 'this way' and 16 foot that way!"

CSD: Sounds like the 'birth' of a new 'antenna legend' to us.

DEHNERT: "That's how Dave Fedric started the legend; he couldn't get those round suckers in a trailer so he simply whacked off the corners with a skill saw!"

ODOM: "Since we are off on square antennas, maybe one of you can tell me something I have wondered about for years; if you have a square dish, why don't you have a square feedhorn? Something doesn't mesh here with me."

DEHNERT: "All of the original, classic feeds were rectangular; just slightly 'out-of-square.' And here's the surprise; that type of feedhorn has a **round pattern, not a rectangular pattern**. It doesn't see square, it sees round, in spite of its shape. The only way you can create a square pattern is to go to dielectric loading and you **can** do that; the military does it with some special antennas, especially for radar beam shaping. But, here's the rub, anytime you do that, typically there is a loss in the feed system. They get away with that in a radar system, for example, because they can up the transmit power or increase the antenna size to get the range back they are designing for. We can't do that with our 'service,' home TVRO. We are asking our antennas to be **as small as possible**, and at the same time to be **as efficient as possible**. There is simply no room for giving away feed efficiency with TVRO to create a square feed pattern for a square or rectangular feed surface."

CSD: So where does that leave a guy married to a square or rectangular antenna?"

DEHNERT: "Up to his knees in alligators. If he under illuminates

the dish so his feed doesn't see the ground behind the dish or at the corners and edges, he is giving away some of his antenna surface. If he over illuminates the surface, his feed sees ground noise where the dish has lost its corners. Fortunately that is way out there at the very edge of the feed pattern and it may be 15 to 20 dB down or so. But it still hurts.

"As long as we are off on things that bug us, let me mention some more. All of this crap about deep dish antennas and 80% efficiency really gets to me. Hell, the government can't find enough cubic money to build **even one** parabolic antenna as a model that achieves 80% efficiency so how can we expect all of these people running around building antennas in their garage to do it for \$47?"

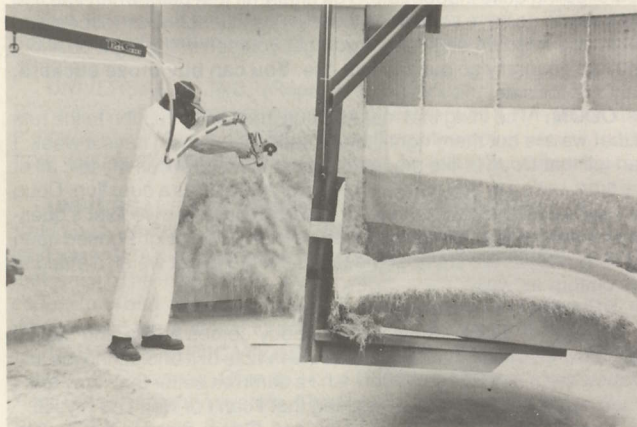
"The only reason to design a deep dish is for mechanical considerations, and perhaps if you do it just right with the feed, Tl considerations. But the primary reason that stands the test of scrutiny is for mechanical considerations or dish strength. A perfect example of doing it wrong was the classic Harris Delta-Gain dish with a Cassegrain feed. They claimed better gain and lower sidelobes. Horse feathers; it has worse sidelobes! The only thing you gain with a deep dish is strength by virtue that there is more curve to the dish. It's really very simple; **when you go from a .4 f/D to a .3 f/D, there is 11% more material in the dish!**

"Our 7.6 meter fiberglass dish, which incidentally is the largest fiberglass dish in production, is a .3 f/D **because I needed the extra strength.** Not for any of these dumb 'reasons' you see claimed by people who apparently believe they have unlocked the secret to 80% parabolic efficiency by locating a secret chamber in King Tut's tomb!"

ODOM: "I concur with Doug totally. I am amazed when people claim 75 or 80% efficiency with screen mesh dishes that sit there on their mounts moving around a half inch or more in the breeze, shaking like giant bowls of jelly!"

DEHNERT: "Well, there is more to the strength on our 7.6 meter than the .3 f/D sections; to get the dish to be parabolic in shape, I had to build it into the mount behind the dish. This whole thing started as an experiment; a customer wanted this size antenna and we had some slow time in the shop last winter so I designed a tool for a single panel. I had to use ten panels for a 7.6 meter surface and that defies everything we had said about multi-section antennas. Like I said, it was an experiment. We kept screwing around with the tool and we pulled six or seven sets of panels so that when we were finally there, we had a 25 foot circle at the end. Shrinkage on a 25 foot is not insignificant!"

"The next problem was holding all of those suckers up in the air in a rigid parabola shape. We finally got there but at a tremendous cost; my cost, my direct cost, in the present mount is \$15,700. **But it works!** We have about 70 thousandths RMS accuracy and it plays well. Now if I can get the mount down to about 12 grand to go with the just over one ton of fiberglass in that antenna, we'll have a new product. I hope to be able to go out the door with a 25 foot antenna that sells for \$25,000 or



ODOM/ 'The accuracy of Doug's antennas and my antennas exceeds that of some of those firms that get two or three times as much for their products as we do ...'

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so and I have 16 of them back ordered already! Anybody else in that category is over \$32,000 for an antenna and mount. It's rated at 125 MPH wind load survival and it's no toy. **It works because we have enough structure behind the glass panels to support it** and each panel is machine drilled to match the face so when you install the panel you literally **pull the panel to the mount and force it to conform** to the parabolic curve. We started out planning to make the fiberglass hold the curve; Good Lord . . . no way!"

**CSD: Address that question, Randall. As you go larger and larger with a fiberglass antenna, at what point are you really in trouble when you expect fiberglass to give you parabolic shape with its own hat ring or other support system?**

**ODOM:** "I thought you were in trouble before you got to where Doug's at! My own experience with fiberglass told me that with what I knew about working with the stuff, someplace between a 16 foot and a 20 foot you were running into big structural problems to hold the surface accuracy. But Doug's taken a different approach; he's built a back structure to support the fiberglass and he is not expecting the fiberglass to hold itself up. **That's important.** Take our sixteen footer where we use a hat ring on the back side. The hat ring is a solution but it only helps up to perhaps sixteen feet. We have panels that go on to make it a twenty footer but the further you go with such a system the less accurate the system is. It really surprised me what Doug just said about holding the tolerance to 70 thousandths . . ."

**DEHNERT:** "It absolutely surprised me when we got the first one operational . . . I got my foot in my mouth at the beginning of this project and once we said we would do it, I felt we had to make it work. The antenna was six to eight months longer to get to a working state than we had anticipated. I was ready to quit at one point, several points actually, but each time I felt that way I'd go back and make some measurements and come to the conclusion that we were not 'that far away' from having an acceptable product. So we just kept at it. Since we arrived at where we are now, I've gone over and crawled around the cable system's ten meter antenna and we have better surface accuracy with our design than S/A had with their 1975 vintage ten meter dish."

**ODOM:** "I don't like to bad mouth other products but it's the truth that there are some products out there which are highly overrated for their surface accuracy."

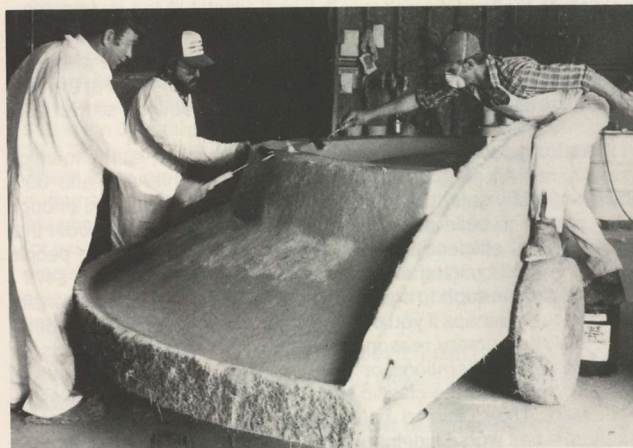
**CSD: Are you calling names here?**

**ODOM:** "Well, not exactly. But probably the accuracy of Doug's antennas and my antennas exceeds that of some of those firms who get twice or three times as much for their products than we do . . ."

**DEHNERT:** "I'll call a name; I won't pick on their antennas because they build a good product. But I can stand my five meter antenna up at a cable system alongside **Scientific Atlanta's** five meter antenna and I can deliver to the cable headend 1 and a half to 2 dB better video signal to noise than the S/A five meter antenna. And I will guarantee that to anyone who wants it in writing. Now this observation. **That type of antenna**, any antenna in the five meter and up class, **is really only as good as the crew that goes out to put it together.** That's true with S/A, ours, anyone's. The **individual** pieces for an S/A are very accurate. Where people make mistakes is in the assembly; they make it so difficult to do it absolutely correctly, and doing it absolutely correctly is the key here, that very few of them ever go together the way they should. They make it so complicated that they end up giving away signal because the crews short-cut the assembly process in frustration. Crews in this business, subcontractors that sign-on with S/A for example, get paid by the job, not the hour. There is no incentive to do it slow and **exactly** according to the book."

**ODOM:** "I have always said there are two things that are overrated in this world; one is (expletive deleted) and the other is engineers. The reason I say that is normally you will have some guy owning a company who doesn't have anything to do with production, whatsoever. He'll have about five engineers between him and what is going on. The owner gives the orders and that order has to go down four flights of stairs before it gets to the guy on the line who is making \$3.75 an hour doing the actual work."

**DEHNERT:** "I always felt that the guy who signs the checks should be out there on the floor scratching on the project as well . . ."



**DEHNERT/ 'Shrinkage on a 25 footer is not insignificant!'**

**ODOM:** "That's my point. You end up with 'tolerances' that drift between the owner and the worker; most of the problems with products can be traced to a lack of good understanding or care. The owner cares alot, the next guy in line cares less, the guy after that cares less than that and so on. The more people in the line between product concept and product conception, the greater the product tolerances become."

**DEHNERT:** "I want to make a comment; I, fortunately, have not been burdened with a formal education."

**ODOM:** "I told **Lewis Larsen** last night that I have more respect for him than most people in this world. Life is nothing more, really, than a sum total of experiences. Education is nothing but a total of experiences. There is one ingredient which most people are not born with and that is common sense. And common sense is something you don't learn, unfortunately; it is a 'gift' to you and you either have it or you don't. I can sit here and talk with Doug and I can see he has a lot of common sense. You don't have to have a formal education to back up common sense; but it does help. The best combination in the world, and it is rare, is an engineer with common sense. **Lewis Larsen** is one of those rare individuals."

**DEHNERT:** "Unfortunately, that is exactly true. I saw it at Arctic Enterprises. They were the largest manufacturers of snowmobiles in the United States. They were also the largest corporate bankruptcy in the history of the state of Minnesota! When I first went to work for Arctic, they brought me out there because I could make two-cycle engines go fast. Then I started rubbing shoulders with Mechanical Engineers and Ph.D. types and I walked around there for three or four years feeling quite inadequate. You finally hit that point when you find out that you do have something that they can't teach you in school and when you need an engineer, if you get yourself in the right position, you can generally go out and hire one. **You can buy those suckers; they are for sale!**"

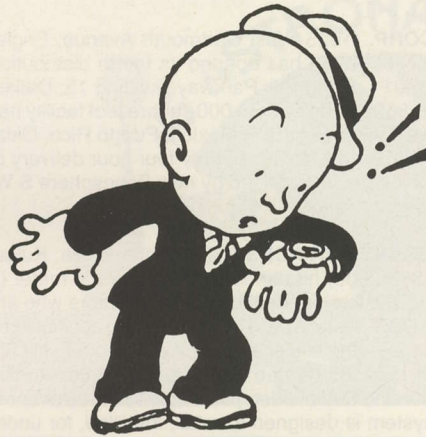
**ODOM:** "The thing that makes Doug and I an exception to the rule is that we are out there right in the middle of it, seven days a week. I can tell that Doug is like me, and I check the tolerances myself, all of the time. Let's say you have a tool maker and he has a question. Doug can answer his tooler's questions and I can answer my tooler's questions. There is no engineer between us making decisions based upon some textbook. We stand at the top of the stairs but we also stand at the bottom as well."

**DEHNERT:** "I still sweep the floor in my office . . ."

**ODOM:** "I do too! Anytime somebody comes to me and says 'I can't do this, it is too hard,' I jump in the middle of it and do the job just to show them that Randall Odom isn't a damn bit better than they are. I never ask someone to do something that I can't or won't do myself."

Next month in **CSD/2**, Dehnert and Odom discuss production capabilities for fiberglass antennas, and explore the myths surrounding high tolerance fiberglass antennas explaining what the dealer should look out for when evaluating fiberglass products now available in the field.

# TIME IS RUNNING OUT!



**OCTOBER 18th/ 8 PM EASTERN.** Tune in the gigantic, super colossal TVRO industry video-extravaganza of all time . . . **TVRO's FIFTH BIRTHDAY PARTY!**

**Two hours** of unmitigated fun. See the **FCC** 'approve' home TVROs. See **Scientific-Atlanta** launch 'Homesat'®. See **Ted Turner** tell bedroom jokes. See **Tom Snyder** ask for a TVRO for Christmas. See **Walter Cronkite** describe TVRO as 'Rube Goldberg.' See **Coop** get hit with a 'pie in the face' and witness the birth of an industry. Your Industry. **TVRO.** 8 PM eastern, Galaxy 1, transponder 21 and Westar 4, transponder 12X. **Be there!**

## NEW PRODUCTS/ continued from page 6

understand the functions or to assist dealers in troubleshooting.

**STEM-TEK SYSTEMS** (5324 Appian Way, Taylorsville, Utah 84118; 801/973-7184) offers dealers a unique service; the repair of actuator arms and replacement (new) actuator jack tubes. When an inner tube has been bent, it is replaced with a new tube which is three times the thickness of tubes commonly found in actuators. Charges vary from \$45 per tube for 18 and 24" to \$55 for 36" and \$60 for 60" tubes. The firm also supplies replacement tubes, for dealer stocking, to allow dealers to make field repairs on their own without unnecessary 'down time.'

**TIGER MANUFACTURING COMPANY** (P.O. Box 130, Kenmore, Wa. 98028; 206/487-3433) has announced their 'Linac Antenna Drive' system. The unit is designed for use by full system manufacturers and is available with hall effect, pot, and optical sensing options. An optional solid state internal drive circuit is also available with built-in limit-switch control and full solid-state operation. They claim the unit is totally waterproof and designed to prevent freeze up in cold climate.

**UNIVERSAL B, INC.** (Route #4, Savannah, Tn. 38372; 901/925-8323) which manufactures the Weatherwall LNA cover has announced a 'Weatherdome' universal fit weathercover version made from injected plastic with U/V stabilizers for sunlight resistance.

**UNIVERSAL ELECTRONICS, INC.** (4555 Groves Rd., Suite 3, Columbus, Oh. 43227; 614/866-4605) has begun shipping a new 1 inch wide COAX-SEAL product which is sold in four-pack rolls of 12 feet each. The new, larger width allows sealing of bulky type 'N' connectors and transition fittings in 'one swipe' without having to double-mold the material in its narrower width form.

**LAUX COMMUNICATIONS, INC.** (4460 South Lake Forest Drive, Suite 218, Cincinnati, Ohio 45242; 513/733-1500) has released their new 'Beta-9' antenna system. The 8-panel system is formed on draw dies and there is a 3 inch perimeter flange and closed corners for strength and safety. The reflector surface is double galvanized steel with an electrostatic applied epoxy/polyester powder paint that is oven baked at 400 degrees. An integrated mount uses ductile iron castings

for strength and the system comes with a Seavey model ESR 40C feed for its .3 f/D ratio.



**LAUX Beta 9 resists nasty stuff**

**U.P. SUPERIOR SATELLITE DISH MFG.** (1651 17.4 Road, Escanaba, Mi. 49829; 906/789-1027) has acquired the assets of U.P. Satellite Dish Company and will continue to market the full line of screen mesh dishes from 5.5 to 25 feet in diameter. The new owners are Ken Swanson, Tim Dailey and Jerry Bartol and the trio has been involved in the manufacture and sale of TVRO antennas for the past two years. A new production facility was scheduled to be completed late in September increasing the available space from 12,500 to

21,500 square feet.

#### NEWS Of Distribution

**ECHOSPHERE CORP.** (1925 West Dartmouth Avenue, Englewood, Co. 80110; 303/761-4782) has opened its fourth distribution business location at 3901 La Reunion Parkway/Building 15, Dallas, Texas 75212 (214/630-8625). The new 58,000 square foot facility has been designed to serve TVRO dealers in Mexico, Puerto Rico, Oklahoma, Arkansas, Louisiana and Texas. Twenty-four hour delivery of shipments to most of this area is promised by new Echosphere S.W. manager Steve Schaver.

**GALAXY BROADCAST SERVICES** (Lamplighter Plaza, Kulpsville, Pa. 19443; 215/368-2800) has announced a new 1.3 meter (4 foot) 'Galaxy Receiving System' for dealers and distributors who are interested in the CBD 'DBS' sales area. The new system consists of a proprietary high accuracy single piece dish, Az-El mount, built-in polarization controlled feed, 85 degree LNBC and dual conversion receiver with both baseband audio-video plus RF modulated channel 3 (or 4) output. The system is designed to retail, installed, for under \$1,500 to the end user and GBS provides extensive marketing aids to the dealer.

**NATIONAL STEELCRAFTERS, INC.**, through a new division named Craft Satellite Systems (P.O. Box 58, Gastonia, NC 28052; 704/867-8821) has entered the TVRO equipment distribution business to go along with their Craft Magnum 10 and 12 foot aluminum mesh dishes. Products carried include items from Boman, Houston Satellite Products, Chaparral Communications.

**SATELLITE SALES, INC.** (614/431-1517) has recently conducted their third Dealer Information Sharing Seminar at the Parke Hotel in Columbus, Ohio. SSI also recently opened a new distribution facility in Columbus.

**SATELLITE RECEPTION SYSTEMS, INC.** (145 Columbus Road, Athens, Ohio 45701; 614/594-2524) held their second annual 'Technical Showcase' at a location near Detroit August 3-5 and reports some 200 dealers attended a special dealer certification program. Representatives from Janeil, Amplica, Dexcel, KLM and MTI shared teaching responsibility in the ten hour marathon session. The show reportedly drew a total of 300 dealers from a several state area. A set of audio tapes of the certification sessions backed up by course manuals are available; \$39.95 per course or \$125 for all four courses. Optional videotapes of the same sessions are also available.

**SATELLITE TV ANTENNA SYSTEMS, LTD.** (10 Market Square, Staines, Middlesex, England, 0784 61234/51255; Telex 877440) has successfully demonstrated a 1.2 meter 12 GHz TVRO system in Europe with an estimated cost of approximately \$1,900 (US). The system includes dish, feed, LNC and the TVRO receiver.

**SATELLITE VIDEO SERVICES, INC.** has added a new 'advanced technical installation' no-charge seminar to their well attended series of dealer seminars. The new class is held on the first Wednesday of each month and covers such things as electronic set-up, motor drive hook-up, receiver tweaking, and troubleshooting. The class features specialized instruction for the Uniden models 3000 and 1000, Intersat Baby-Q (receivers), as well as Draco and Surveyor motor drives. For information, contact the firm at their Catskill, New York office (518/678-9581).

#### POTPOURRI Of Dealer Aids

**CWY ELECTRONICS** (P.O. Box 4519, Lafayette, Ind. 47903; 800/428-7596) nationwide or 800/382-7526 Indiana) has announced a new line of outdoor, security boxes for the housing of electronics. The all-welded box uses aluminized steel construction with a hingeless, secure-lid system to deter entry by unauthorized personnel. Multiple entry knockouts allow the user to select the mounting configuration and cabling exit and entry locations. Options include cam locking, interior board backing and a heavy baked enamel finish.

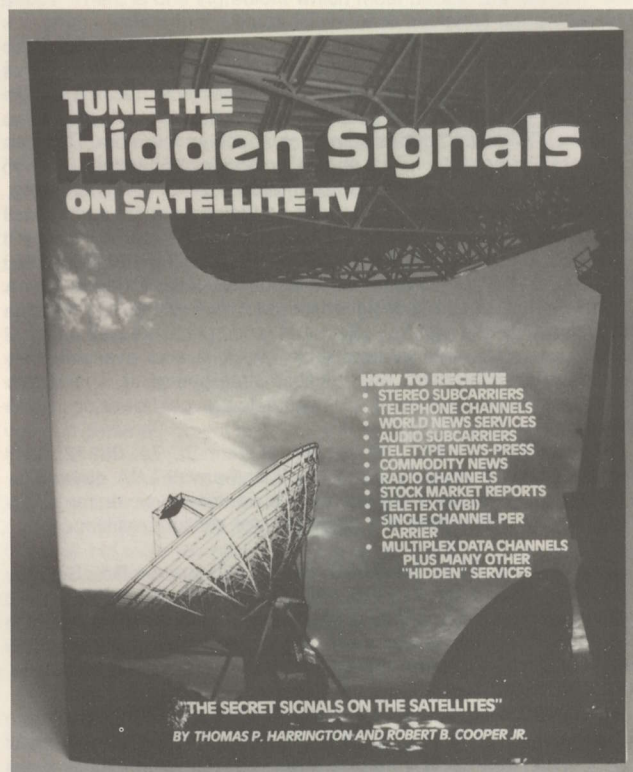
**NEMAL ELECTRONICS INTERNATIONAL, INC.** has announced 'type 4' direct burial satellite control cable. The new product includes RG-6/U signal cable, 2 conductors of 12 gauge, 3 conductors of 18 gauge, 3 conductors of 20 gauge with drain wire and shielding, and 3 conductors of 22 gauge with drain wire and shielding.

Drain wires are tinned copper and the jacket is a patented direct burial polyethylene jacket. Nemal is at 12240 N.W. 14th Avenue, North Miami, Fl. 33161; 305/893-3924.

**NEWTON ELECTRONICS, INC.** (340 E. Middlefield Rd., Mountain View, Ca. 94043; 415/967-1473) increased the net price on their GBS2000 test set system from \$2,995 to \$3,495 on October 1st. The tests system gives the service bench technician or engineer complete selection over 4 GHz and 70 MHz signals with NTSC color bars and NTSC sync as well as a selection of audio subcarrier frequencies.

**SHELBURNE FILMS** (Reedsville, Ohio 45772; 614/378-6297) has released their second TVRO industry related videotape; 'Installing Satellite Antennas.' The videotape runs approximately 30 minutes and takes the dealer through the often complex world of satellite antenna installation and alignment in easy to digest doses. A particularly adaptive technique is the use of various industry technical personnel who explain segments of the typical antenna installation, and the importance of each step. The presentation comes off well and while it may seem like a healthy investment (\$125 for VHS or Beta II) the tips contained in the '8 segments' could well save a dealer valuable time and embarrassment in a consumer installation.

**UNIVERSAL ELECTRONICS, INC.** (4555 Groves Road, Suite 3, Columbus, Ohio 43232; 614/866-4605) has released a new book entitled 'Tune The Hidden Signals On Satellite TV'; something of a mis-nomer since most of the hidden signals are not related to or close to the TV signals in the first place. The new publication was written and compiled by Tom Harrington, and used some data from CSD research work both published and unpublished. This is apparently the first book to detail the many various narrow band audio and data services found on satellite, including (but not limited to) stereo subcarriers, telephone SCPC, world news services, teleprinter press services, network radio channels, stock market reports, Teletext®, multiplex data services and more. Pricing for the amply illustrated 165 page book is \$16.70 including shipping and handling.



HARRINGTON reveals it all . . .

NEW PRODUCTS/ continues on page 20

## LEGAL/ continued from page 8

owners at a 'fair, market, price.'

SPACE's Rick Brown does not feel that the 'compromise' was dangerous to TVRO. He points out that while there is certainly the possibility for HBO or other premium programmers to scramble and then price their services 'out of reach' of individual TVRO (home system) owners, he feels that the 'legislative history' of the new law makes it clear that it was the intent of Congress to create a mechanism which would make such services available to the largest possible user base at the lowest possible price. As Brown notes:

**"With this legislation in place, we are now arguing price, not legality. I believe this is a very important step and while the industry may well find itself in court at some future date trying to force some premium programmer to deal with us on a 'fair price basis,' at least we will not be arguing our own legality. It is an important cornerstone for TVRO's future."**

While Congress was busy passing HR 4103 in the House and S.66 in the Senate, and much of the industry's attention was focusing on news reports out of Washington, another activity directly relating to Washington was shaping up. Out at the **Intersat Corporation in Lake St. Louis, Missouri**, a very special 11 foot Challenger TVRO dish antenna was being skillfully painted for a ceremony scheduled for 1:30 PM (eastern time) October 17th on the White House lawn. President Ronald Reagan is scheduled to appear in a 'lawn ceremony' which indirectly amounts to official Presidential sanction for our industry. Here is how that was shaping up as CSD/2 went to press:

- 1) President Reagan has been searching for a project which would help American youth become more conscious of the importance of science and technology in everyday lives. Educators have warned us for some years that by failing to expose children between 10 and 18 to the excitement and wonders of science and technology, America is in danger of losing its world leadership in these areas.
- 2) The program created to overcome this 'educational gap' is called (the) **Young Astronaut Program**, or YAP for short. A number of former and present Astronauts, including **Gene Cernan** who has business ties with the Intersat Corporation, have participated in the planning for this program.
- 3) Young Astronauts will involve the establishing of a full-time NASA related programming channel on **RCA F4** (F1R temporarily, at first only). That channel will carry live coverage of all future Shuttle flights plus be programmed with special science and technology courses and stories designed to excite children between the ages of 10 and 18.
- 4) Participating in the program are such firms as Commodore Computers, Coca Cola, RCA (et al). These firms are providing the initial 'seed money' (\$250,000 each) to get the programming on 'the bird' and to create the YAP 'chapter affiliate clubs' through schools all over North America.

**The concept is this.** NASA, through a privately endowed (non-government funded) corporation, will provide the excitement. The material will be transmitted on F4 and it will be available for use by anyone with a TVRO. However, rather than 'chance' that TVRO sales will develop on their own to reach the children, **the YAP-Channel will promote a special national program** designed to put in the ground **20,000 TVRO terminals**, during the first 12 months, at schools, youth centers and churches all over North America. A goal of **110,000** such terminals by 1992 is planned by the program.

Each school (et al) will be asked to form a chapter club affiliated with YAP. The children will be enrolling in their local chapters and they will receive, ala the Boy and Girl Scouting programs, badges and certificates and study manuals to help them better follow, understand and profit from the material transmitted via satellite. The corporate sponsors will participate through their advertising and promotion departments; Commodore, for example, hopes that each terminal installed will have a Commodore computer as part of the package and **they plan to ship software** to the schools **through the F4 transponder**.

**Scheduled for the afternoon of October 17th** as this is written (subject to some possible delay because of weather or by Presidential



**PRESIDENTIAL DISH/** inside the Lake St. Louis Intersat facility, the two halves of the 'Presidential Dish' are custom-painted with the official insignia of the Young Astronaut Program prior to being air-lifted to Washington, DC. Project coordinator Al Bishop (upper photo) came to Intersat from NASA himself and has been heavily involved in getting the project pulled together.

scheduling), President Ronald Reagan will appear on the White House Lawn with the specially decorated 11 foot Challenger antenna to announce the details of the program to the press and public.

Plans call for plenty of network news coverage and media exposure. Many of you will be receiving this issue of **CSD/2** on the morning of October 17th and you are of course encouraged to check the evening newscasts to see if the program came off on schedule.

### THE DISH TESTER

Dish surface accuracy is probably *The* most important part of a good picture. Ever wish you could check it? Now you can, with a tool small enough to fit your tool box — The Dish Tester. It will answer questions like: Do I have to replace that dish, or can I pull it true? Are my sparklies caused by the electronics or a bad dish — factories get tired of returned electronics that work good. Was the metal dish bent in shipping — the Dish Tester will tell you. Did you assemble the dish correctly? Has the base warped the dish? Why sparklies in every other dish, they're all the same? Is it TI causing sparklies, or a bad dish? Where do I put the clips or extra braces to make that mesh dish more efficient? It didn't have sparklies before the windstorm, but it does now — is the dish bent — the Dish Tester will tell you. Am I taking the right dish to the show? Are my mfg. tolerances O.K.? Send \$20.00 (any way you want), and we will send you a Dish Tester postage and tax paid.

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Word of mouth advertising from customers can make you or break you. So make sure you get compliments—not complaints—with BR's exclusive "Futureproof"™ five-year warranty. It's the first opportunity for TVRO customers to buy an extended protection plan for their systems at the time of purchase, just like they buy for their cars.

As a BR Satellite Communication dealer, you can offer "Futureproof"™ coverage for a minimal cost to your customers (and a profit for you).

Backed by one of the world's largest insurance companies, BR Satellite will guarantee all electronic components against any manufacturer defects for a total of five years (Including the first year which we cover automatically). Contact us to discuss all the details—then "Futureproof"™ your reputation.

### Immediate Free Replacement Service.

*BR Satellite is the only distributor in this industry who will replace any defective TVRO product with a new unit, just by making one toll-free phone call. Before you send the defective unit back and at no cost to you.*

### The "Futureproof"™ Decal—a Sign of Success.

If you've got it, flaunt it! The "Futureproof" warranty sticker in your store window could be your best salesman. We'll send brochures and in-store displays, too.



### Our Standard Warranty—Still the Ultimate, Still Free.

Every piece of equipment we sell is backed by our unconditional replacement policy for a full year.\*

It's an irresistible sales tool, and it won't cost you or your customers a cent.

We'll ship a replacement via UPS Blue Label, at our expense, the same day you call us. We ask only that you ship the defective unit, at your expense, within 5 days after you receive the replacement.

At BR Satellite, there is no "turnaround" waiting time. And only a bare minimum of your valued customer's down time.

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Our total dealer support program can provide you with ad art, ready for you to run and brochures to educate customers.

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Earth Terminals  
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USS Maspro  
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Seavey Engineering  
Newton Test Generators  
Satellite Ground Components  
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Every product we distribute is in stock at all times. If you call our toll-free number before 2 PM, we'll ship your order the same day. And unlike some distributors, we're happy to ship C.O.D.

\*All products and items discontinued during warranty period not subject to immediate replacement.

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**BR SATELLITE** is the only distributor in this industry who will replace any defective TVRO product with a new unit. We'll ship a replacement via UPS Blue Label, at our expense, the same day you call us.

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Introducing the quiet one—the remarkable Norsat LNA! Norsat has combined years of experience with traditional Japanese manufacturing excellence to produce a low noise amplifier of exceptional quality.

Quiet quality, for better pictures even on today's smaller dishes. Degree for degree, dollar for dollar, the Norsat is simply the quietest, most efficient LNA ever made.

*Unique all GaAsFet four stage design (no bi-polars) with min. 51 db gain.*

*Total weatherproofing—precision milled recessed top cover; computer-milled aluminum body.*

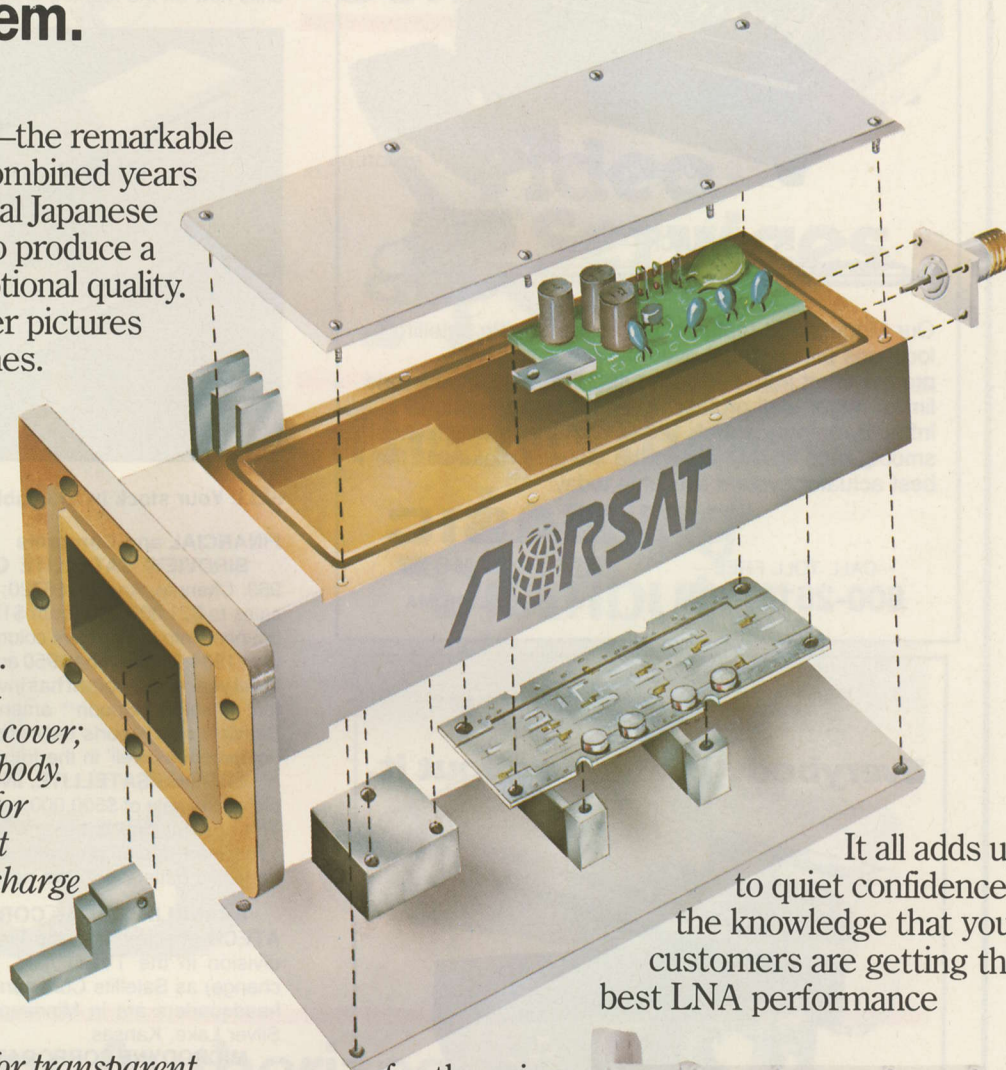
*Grounded input probe for maximum protection against failures due to lightning discharge or high ambient RF fields.*

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*Low VSWR resonator for transparent impedance match into the first GaAsFet stage.*

*Separate power supply board featuring ultra-stable regulation with built-in protection against polarity reversal, voltage fluctuation, and static discharge.*

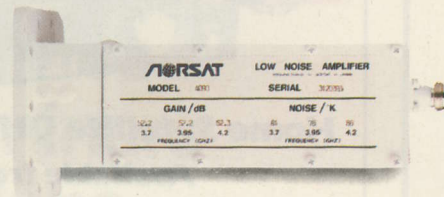
*Available in 100°, 90°, 85°, 80°, and 75° noise temperatures.*



It all adds up to quiet confidence—the knowledge that your customers are getting the best LNA performance

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*Quantity Prices Available.*



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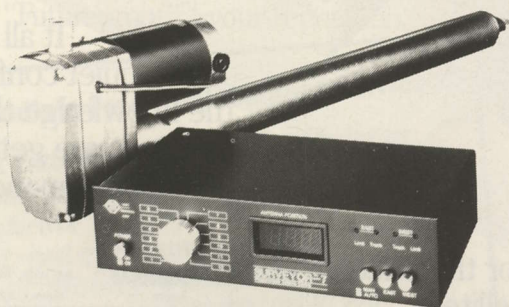
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Our Model 2350 features 16 programmable satellite locations plus manual override and is easily programmed from the front panel. Dual adjustable end limits, motor stall protection, on-off switch, optional infrared remote control, 125 ft. cable, and the quietest, smooth running 24" jack in the industry make this the best actuator system available today.

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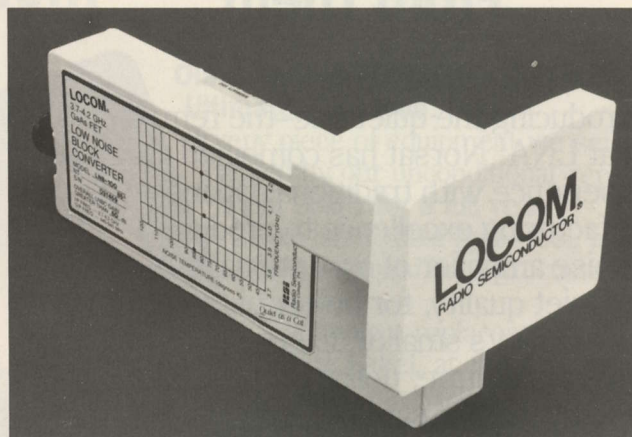


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Carolina Satellite Systems, Wilmington, NC, 919/395-1167  
Earth Stations of Columbia, Columbia, SC, 803/254-0535  
Startech, Salem, VA, 800/221-4656  
NEDCO, Toronto, Canada, 416/677-1410

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518/272-6870

**RADIO SEMICONDUCTOR, INC. (LOCOM)** (315 Benner Pike, State College, Pa. 16801; 814/238-2133) claims a breakthrough in antenna electronics with the introduction of a new combination LNA plus block downconverter; appropriately, the **LNBC**. By building the BDC into the LNA housing, line losses between the two normally-separate units are eliminated and circuit efficiency is improved through better 'matching' techniques. The oscillator for the block-downverter portion employs a GaAs-FET oscillator with a dielectric resonator and a variety of IF outputs, compatible with the various BDC units now on the market, are available.



**SELL Your stock in 213 cable; LNBCs are here . . .**

#### FINANCIAL and Corporate

**BIRDVIEW SATELLITE COMMUNICATIONS, INC.** (P.O. Box 963, Chanute, Kansas 66720; 316/431-0400) reports an increase in sales to \$21,800,000 (from \$13,300,000 in 1983) while net earnings bounced into the positive column for the first time (\$168,000) in fiscal year 1984. Birdview had 950 authorized dealers at the end of the 1984 fiscal year and reports it has invested \$1,200,000 in tooling for a new 7 foot 'offset fed' Spoon™ antenna which it is now bringing to market. Birdview also reports they are 'positioned to provide Ku band DBS equipment as well' in the future.

**BROOKS SATELLITE, INC.** (201/828-5335) reports it has completed the sale of \$500,000 in privately offered stock at \$1 per share. The new funding is being utilized by the firm to launch a national franchised dealer program and they forecast the opening of 100 franchise outlets over the next 12 month period.

**FRANKLIN SIGNAL CORPORATION** has changed its name to **ATECH** effective with the first of September. The firm operates a division in the TVRO field, previously known (before the name change) as Satellite Communications Corporation (SATCOM). Firm headquarters are in Minneapolis, the TVRO division is located in Silver Lake, Kansas.

**MICRODYNE CORPORATION** (P.O. Box 7213, Ocala, FL 32672; 904/687-4633) reports a 19% increase in sales volume to \$14,025,000 for the six month period ending April 29th with a net income of \$989,000 or 17 cents per share. Microdyne stock is traded in the over-the-counter market.

#### PEOPLE

Danex Microwave reports that **Dennis Shouldice**, former VP of marketing, has left the firm with regrets. Shouldice advises he is establishing an independent marketing and trans-border rep business to assist US suppliers in gaining entry to Canada with their products (contact Shouldice at 604/873-8222).

R.L. DRAKE Company reports that firm Chairman **Peter W. Drake** has been elected to the Board of Trustees of Wilmington College, a private, liberal arts school founded in 1870. Drake graduated from the college in 1970.

ETHEREUM SCIENTIFIC CORP. announces that **Ms. Lanette Premeaux** has been appointed as Teleconferencing Director for the

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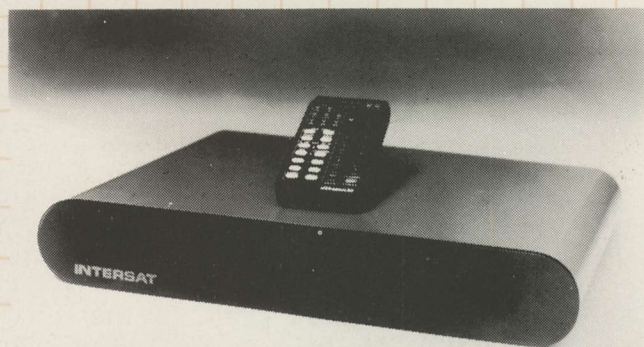
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firm at their Houston facility. Her duties include marketing and scheduling of the firm's transportable uplinks and transponders (713/784-2630).

ATECH announces that **William C. Farris** has been named as Operations Manager for their Silver Lake, Kansas TVRO subsidiary.

MICROWAVE SYSTEMS MARKETING has announced that **Clay Nappier** has been promoted to VP of Sales from National Sales Manager. MSM sells a line of LNAs and recently brought out a receiver called 'Discovery.'

#### CALENDAR Through November 30th

Attention events chairmen: Place **CSD/2** (P.O. Box 100858, Ft. Lauderdale, FL 33310) on your mailing list to receive announcements of events of interest to TVRO dealers worldwide. Deadline for listings is the 25th of the month preceding dated month.

OCT 16-18: Jerrold Technical Seminar in Columbus, Ohio; contact Lillian Ruoff 215/674-4800 for pre-registration details.

OCT 18: **TVRO'S FIFTH BIRTHDAY**, special two-hour telecast commemorating FCC de-regulation of TVRO (the elimination of mandatory TVRO licensing), 8 PM eastern simultaneously on Galaxy 1, TR21 and Westar 4, TR12X. Program produced by CSD and CSD/2 and supported by leading suppliers to the TVRO industry. Includes videotape highlights '**Fifth Birthday Party**,' Nashville, September 3rd.

OCT 19-21: SMATV/Private Cable Workshop, sponsored by Burrill Communications in Phoenix, Arizona; contact 608/873-4903 for details.

OCT 22-24: SMATV Continuing Education Workshop dealing with operational problems of SMATV and private cable systems; New Orleans. Contact Larry Hannon 904/237-6106.

OCT 23-24: BLONDER-TONGUE SMATV/CATV/TVRO Technical Seminar, Bloomington, Minnesota. Contact Eugene Foster 612/941-9800.

OCT 25: **SATELLITE SHOWTIME** (fourth) TVRO industry program, two hours in length, transponder 8, F4, 8 PM eastern.

OCT 26: Terrestrial Interference Seminar conducted by Microwave Filter Company, East Syracuse, NY; contact 315/437-3953.

OCT 30: **SATELLITE SHOWTIME** TVRO industry program (repeat), two hours in length, transponder 8, F4 at 10 PM eastern.

NOV 16: Board meeting, **TVRO Dealer Board**, SPACE, Dallas, Texas. Contact Chuck Hewitt 703/549-6990.

NOV 17: **Board meeting, full SPACE Board**, Dallas, Texas. Contact Chuck Hewitt 703/549-6990.

NOV 18-20: **STTI Dallas Regional Industry Trade Show**; contact 1/800-654-9276 or 405/396-2574. SPACE Dealer Certification Courses planned as part of program.

#### SMARTER DEALERS/ continued from page 3

The present 'start-up program' is evolutionary; it was put together in some rush as the sun was rising on Nashville. **Dealers** who view this program with any interest at all should carefully think out **what they want** from the SPACE certification program; and make strong suggestions or recommendations to SPACE's Chuck Hewitt (**709 Pendleton Street, Alexandria, Va. 22314**; 703/549-6990). If you should happen to put it in writing, I'd appreciate having a copy of your suggestions as well (CSD, P.O. Box 100858, Ft. Lauderdale, FL 33310). The program, to be viable, needs more 'inputs.' Please do your part to see that they have the inputs they need!

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The complete answer to satellite dish movement and polarotor control. Up to 64 satellite locations with microprocessor accuracy of position and polarotor. Easy to use — simply turn the knob until the satellite reads out and push "GO TO." The Aimer III does the rest. Built-in power supply — low profile — superb styling.



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Designed and built for satellite dish movement. Sealed tubes, solid lubrication, gimbal rod end, Timken roller bearings, anti-jamming. Rated at over 2000 lbs. The Draco Power Actuator operates at 12 to 36 volts with self-resetting current protection. Infrared light eruptors are impervious to all electrical interference. Positively the best Actuator built.

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INFORMATION CONTACT:**

**DRACO LABORATORIES, INC.**  
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# Paraclipse

HIGH PERFORMANCE  
SATELLITE TELEVISION SYSTEM



The Paraclipse 4.8 meter  
(16 ft.) antenna.

PIONEER MEMBER OF  
**SPACE**

Mark Fator photographer

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## Survival of the Fittest

It's a tough world out there. Every minute of every day the effects of wind, rain, heat, cold and corrosion will do their best to defeat your investment.

If your system is to survive and perform accurately day after day, year after year, you will need to start out with equipment strong enough to endure nature's worst.

The famous Paraclipse design rib and ring truss system is simply unequalled in terms of rigidity, strength and parabolic symmetry.

The antenna framework is a precision welded aluminum alloy structure covered with heavy expanded aluminum mesh. The result is a strong, lightweight, dimensionally stable mesh reflector that is capable of supporting the kinds of loading that a solid dish would impose.

The hub assembly, polar drive,

pedestal mount and counterweight are all fabricated from steel. Precision tooling and manufacturing techniques enable the 4.8 meter Paraclipse to track from horizon to horizon and from zero to 90° elevation with perfect, dead center accuracy.

Our counterweight assembly offsets the forward weight bias imposed on the polar tracking mechanism. By placing a mass equal to that of the reflector behind the polar T, we've greatly reduced the demands placed on every component of the drive system. With the drive disconnected, the entire superstructure swings smoothly to the center position and can easily be moved by hand to any position in the arc.

Every part is powdercoated with a beautiful baked-on epoxy finish that effectively seals the antenna from the elements. The entire assembly is put

together with stainless steel bolts, nuts and fasteners.

We're so confident in the way we build the 4.8 meter Paraclipse that we guarantee it for three full years against wind damage. That's right, a three year unlimited wind speed warranty. If it is damaged by wind in the first three years, we fix it. You are protected right up to, but not including an officially declared disaster.\* We are that confident.

You will want your investment to last. You will want your equipment to perform. You will want accuracy and reliability for a long, long time. And you will want all of these things at a reasonable price from a manufacturer who will stand squarely behind his products.

At Paraclipse we think you deserve no less.

**Paraclipse Inc. 3711 Meadowview Drive, Redding, California 96002 (916) 365-9131 244-9300**

\* Full warranty information available upon request.